

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 2

IN THE CLAIMS:

Please amend the claims as indicated below, and add claims 56-64 as follows:

1. (Currently amended) A method of printing a document from a computer with a printer, the printer having a printer processor, the method comprising:

generating, in the computer instruction, data ~~to enable that~~ causes the printer to print plural pages of the document;

generating, in the computer, resource[[,]] information indicative of printer processor resources required by the printer ~~at different stages to print a current page and subsequent pages of~~ printing the document;

sending the instruction data and the resource information required to print the current page and subsequent pages from the computer to the printer with the current page;

scheduling printer processor resources for the ~~different stages~~ current page and subsequent pages of ~~printing~~ the document in accordance with the resource information sent with the current page; and

printing the document with the printer processor resources as scheduled.

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 3

2. (Currently amended) A method as claimed in claim 1, wherein the instruction data is provided as at least one of page description language ~~and/or~~ and job control language.

3. (Currently amended) A method as claimed in claim 2, wherein the resource information is provided as annotation to at least one of the page description language ~~and/or~~ and job control language, and wherein the method comprises, after the step of generating resource information, the step of annotating the instruction data with the resource information.

4. (Original) A method as claimed in claim 3, wherein a common information processing structure carries out the steps of generating the instruction data, generating the resource information, and annotating the instruction data with the resource information.

5. (Previously presented) A method as claimed in claim 4, wherein the common information processing structure includes a printer driver.

6. (Original) A method as claimed in claim 3, wherein a first information processing structure carries out the step of generating the instruction data, and a second information processing structure carries out the steps of generating the resource information and annotating the instruction data with the resource information.

Application Serial No. 09/521,663
Docket No. 30980018 OS (1509-106)
Page 4

7. (Original) A method as claimed in claim 6, wherein said second information structure is located in an information path for instruction data from the first information processing structure to the printer.

8. (Previously presented) A method as claimed in claim 7, wherein said second information structure includes a print spooler.

9. (Previously presented) A method as claimed in claim 7, wherein said second information structure includes a discrete structure receiving the instruction data as input and providing instruction data annotated with the resource information as output.

10. (Currently amended) A method as claimed in claim 3, wherein the annotation is provided in the form of comments in at least one of the page description language ~~and/or~~ and job control language, and wherein the method comprises between the steps of sending the instruction data and the resource information from the computer to the printer and scheduling printer processor resources a further step of filtering the comments in at least one of the page description language ~~and/or~~ and job control language to extract the resource information.

11. (Original) A method as claimed in claim 10, wherein the resource information is provided as comments in page headers of the page description language.

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 5

12. (Original) A method as claimed in claim 11, wherein the resource information is provided as comments in the page header to the first page of the document.

13. (Original) A method as claimed in claim 11, wherein the resource information is provided incrementally in a plurality of page headers.

14. (Previously presented) A method as claimed in claim 13, wherein page headers include resource information for the page to which they relate or to later pages in the document if such resource information has not already been provided in previous page headers.

15. (Previously presented) A method as claimed in claim 11, wherein no resource information is provided as a comment to the page header of the first page.

16. (Original) A method as claimed in claim 15, wherein the step of generating resource information does not include generation of resource information for the first page of the document.

17. (Currently amended) A printer adapted to print a document from instruction data and resource information, the printer having a printer processor, ~~such that the printer processor is adapted~~ being arranged to (a) schedule its resources for the different

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)

Page 6

stages of printing a current page and subsequent pages of the document from in response to the instruction data in accordance with the resource information that includes information required to print the current page and subsequent pages, the resource information required to print the subsequent pages being included with the current page, and [[to]] (b) print the current page and subsequent pages of the document from the instruction data with the printer processor resources as scheduled.

18. (Currently amended) A printer as claimed in claim 17, wherein the instruction data is adapted to be provided as at least one of page description language and/or and job control language.

19. (Currently amended) A printer as claimed in claim 18, wherein the resource information is adapted to be provided as annotation to at least one of the page description language and/or and job control language.

20. (Currently amended) A printer as claimed in claim 19, wherein the annotation is adapted to be provided in the form of comments in at least one of the page description language and/or and job control language, and wherein the printer processor is adapted to filter the comments in at least one of the page description language and/or and job control language to extract the resource information.

Application Serial No. 09/521,663
 Focket No. 30990016 US (1509-166)
 Page 7

5/521,663
 (1509-166)
 Page 8

21. (Currently amended) A computer programmed to provide a document for printing by a printer, the programmed computer having:
 a first information processing structure to generate instruction data to enable a printer to print the document;
 a second information processing structure resource to generate resource information indicative of printer processor resources required by the printer ~~at different stages of printing to print a current page and subsequent pages of the document;~~ and

an information path such that the instruction data and the resource information for causing the printer to print the current page and subsequent pages can be sent from the computer to a printer, the information paths being such that the instruction data for the subsequent pages is sent with the current page.

22. (Currently amended) A computer as claimed in claim 21, wherein the first information processing structure is arranged for generating instruction data as at least one of page description language and/or job control language.

23. (Currently amended) A computer as claimed in claim 22, wherein the second information processing structure ~~generates~~ is arranged for (a) enabling resource information as annotation to at least one of the page description language and/or job control language, and ~~is arranged to annotate~~ (b) annotating the instruction data with the resource information.

reir the
 formation
 formation

claim 24,
 cludes a

rein said
 ion path
 nter.

claim 26,
 spooier.

claim 26,
 discrete
 and for
 formation

claim 23,
 that the
 it one of
 age.

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 9

30. (Original) A computer as claimed in claim 29, wherein the second information structure is adapted such that the resource information is provided as comments in page headers of the page description language.

31. (Original) A computer as claimed in claim 30, wherein the second information structure is adapted such that the resource information is provided as comments in the page header to the first page of the document.

32. (Original) A computer as claimed in claim 30, wherein the second information structure is adapted such that the resource information is provided incrementally in a plurality of page headers.

33. (Previously presented) A computer as claimed in claim 30, wherein the second information structure is adapted such that no resource information is provided as a comment to the page header of the first page.

34. (Original) A computer as claimed in claim 33, wherein the second information structure is adapted so as not to generate resource information for the first page of the document.

35. (Currently amended) A computer system comprising a printer adapted to print a plurality of pages of a document from

Application Serial No. 09/521,663

Docket No. 30980018 US (1509-106)

Page 10

instruction data and resource information, the printer having a printer processor, ~~such that the printer processor is adapted being~~ arranged to schedule its resources for printing the different stages plural pages of printing the document from the instruction data in accordance with the resource information, and to print the document from the instruction data with the printer processor resources as scheduled; a computer programmed to provide a document for printing by a printer, the programmed computer having a first information processing structure to generate instruction data to enable a printer to print the document, a second information processing structure resource to generate resource information indicative of printer processor resources required by the printer ~~at different stages of printing to print a current page and subsequent pages of~~ the document, and an information path such that the instruction data and the resource information can be sent from the computer to ~~[[a]]~~ the printer for causing the printer to print the current page and subsequent pages; and a communication path ~~adapted to carry for sending information about printing the current page with the subsequent pages~~ from the computer to the printer.

36. (Currently amended) An article of manufacture comprising a program storage medium having computer readable program code embodied therein for causing a document to be provided in a form

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 11

for printing by a printer, the computer readable program code means ~~in said article of manufacture~~ including:

computer readable program code for causing a computer to generate instruction data to ~~enable~~ cause a printer to print the document, wherein the instruction data is provided as at least one of page description language ~~and/or~~ and job control language; and

computer readable program code for causing the computer to generate resource information indicative of printer processor resources required by the printer at different stages of printing the document[[,]] and to annotate the instruction data with the resource information, thereby enabling the annotated instruction data to be provided for printing by the printer.

37. (Currently amended) An article of manufacture comprising a program storage medium having computer readable program code embodied therein for enhancing information enabling a document to be provided for printing by a printer, said information being provided as instruction data in the form of at least one of page description language ~~and/or~~ and job control language, the computer readable program code ~~in said article of manufacture~~ comprising computer readable program code for causing the computer to (a) generate resource information indicative of printer processor resources required by the printer at different stages of printing the document[[,]] and [[to]] (b) annotate the instruction data to

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 12

be provided with the resource information, ~~[[for]]~~ thereby enabling the annotated instruction data for printing by the printer.

38. (Currently amended) A ~~computer system as claimed in claim~~
± method of printing a document from a computer with a printer, the
printer having a printer processor, the method comprising:

generating, in the computer instruction, data to enable the
printer to print pages of the document;

generating, in the computer, resource information indicative
of printer processor resources required by the printer at different
stages of printing the document;

sending the instruction data and the resource information from
the computer to the printer;

scheduling printer processor resources for the different
stages of printing the document in accordance with the resource
information; and

printing the document with the printer processor resources as
scheduled,

wherein the scheduling step includes changing the order of operation of tasks related to the printer printing a document segment.

39. (Currently amended) A ~~computer system method~~ as claimed in claim 38, wherein the document segment includes a page of the document.

Application Serial No. 09/521,663

Docket No. 30980018 US (1509-106)

Page 13

40. (Currently amended) A ~~computer system as claimed in claim 17~~ wherein printer adapted to print a document from instruction data and resource information, the printer having a printer processor, such that the printer processor is adapted to schedule its resources for the different stages of printing the document from the instruction data in accordance with the resource information, and to print the document from the instruction data with the printer processor resources as scheduled, the processor [[is]] being arranged such that the schedule of resources includes changing the order of operation of tasks related to the printer printing a document segment.

41. (Currently amended) A ~~computer system~~ printer as claimed in claim [[41]] 40, wherein the document segment includes a page of the document.

42. (Currently amended) A ~~computer system as claimed in claim 21~~ wherein programmed to provide a document for printing by a printer, the programmed computer having:

a first information processing structure to generate instruction data to enable a printer to print the document;

a second information processing structure resource to generate resource information indicative of printer processor resources required by the printer at different stages of printing the document; and

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 14

an information path such that the instruction data and the resource information can be sent from the computer to a printer,

the printer processor ~~[[is]]~~ being arranged such that the resource information enables a change in the order of operation tasks relating to the printer printing a document segment.

43. (Currently amended) A computer ~~system~~ as claimed in claim 42, wherein the document segment includes a page of the document.

44. (Currently amended) A computer system ~~as claimed in claim 35~~ wherein comprising a printer adapted to print a document from instruction data and resource information, the printer having a printer processor, such that the printer processor is adapted to schedule its resources for the different stages of printing the document from the instruction data in accordance with the resource information, and to print the document from the instruction data with the printer processor resources as scheduled; a computer programmed to provide a document for printing by a printer, the programmed computer having a first information processing structure to generate instruction data to enable a printer to print the document, a second information processing structure resource to generate resource information indicative of printer processor resources required by the printer at different stages of printing the document, and an information path such that the instruction

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 15

data and the resource information can be sent from the computer to a printer; and a communication path adapted to carry information from the computer to the printer, the printer processor [[is]] being arranged such that the scheduled resources enables a change in the order of operation tasks relating to the printer printing a document segment.

45. (Currently amended) A computer system as claimed in claim 44, wherein the document segment includes a page of the document.

46. (Previously presented) ~~A computer system~~ An article as claimed in claim 36, wherein the program code for causing the computer to generate resource information is arranged for causing the resource information to change the order of operation of tasks relating to the printer printing a document segment.

47. (Currently amended) ~~A computer system~~ An article as claimed in claim 46, wherein the document segment includes a page of the document.

48. (Currently amended) ~~A computer system~~ An article as claimed in claim 37, wherein the program code for causing the computer to generate resource information is arranged for causing the resource information to change the order of operation of tasks relating to the printer printing a document segment.

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 16

49. (Currently amended) A ~~computer system~~ An article as claimed in claim 48, wherein the document segment includes a page of the document.

50. (Currently amended) A ~~computer system~~ method as claimed in claim 1, wherein the scheduling step includes scheduling the printing of later pages prior to the execution of tasks related to the printing of earlier pages.

51. (Currently amended) A ~~computer system~~ printer as claimed in claim 17, wherein the printer processor is arranged for causing the printing of later pages prior to the execution of tasks related to the printing of earlier pages.

52. (Currently amended) In combination, a computer and a printer having a processor, the computer being arranged for supplying to the printer processor (a) instruction data and (b) resource information indicative of printer processor resources required by the printer at different document printing stages,

the printer processor being arranged to schedule printer processor resources for [[the]] different document printing stages in accordance with the resource information, and to cause the printer to print the document with the printer processor resources as scheduled, and

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 17

the computer printer processor being arranged to provide to the printer processor the resource information as comments in page description language located in page headers for enabling the printer processor to learn, in advance of receiving pages of a job, how the printer resources are to be scheduled to prevent printer stalls.

53. (Currently amended) The combination ~~[[of]]~~ as claimed in claim 52, wherein the instruction data includes page description language.

54. (Currently amended) A method of operating a printer with a processor comprising supplying to the printer processor (a) instruction data and (b) resource information indicative of printer processor resources required by the printer at different document printing stages,

the printer processor scheduling printer processor resources for ~~[[the]]~~ different document printing stages in accordance with the resource information, and

causing the printer to print the document with the printer processor resources as scheduled, causing the computer printer processor to provide ~~to—provide~~ to the printer processor the resource information as comments in page description language located in page headers so the printer processor learns, in advance

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 18

of receiving pages of a job, how the printer resources are to be scheduled to prevent printer stalls.

55. (Currently amended) The method as claimed in claim 54, wherein the instruction data includes page description language.

56. (New) A method of printing a document from a computer with a printer, the printer having a printer processor, the method comprising:

generating, in the computer instruction, data to enable the printer to print pages of the document;

generating, in the computer, resource information indicative of printer processor resources required by the printer at different stages of printing the document;

sending the instruction data and the resource information from the computer to the printer;

scheduling printer processor resources for the different stages of printing the document in accordance with the resource information; and

printing the document with the printer processor resources as scheduled,

wherein the instruction data is provided as at least one of page description language and job control language, and the resource information is provided as annotation to at least one of the page description language and job control language, and wherein

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 19

the method comprises, after the step of generating resource information, the step of annotating the instruction data with the resource information.

57. (New) A printer adapted to print a document from instruction data and resource information, the printer having a printer processor, the printer processor being adapted to schedule its resources for different stages of printing the document from the instruction data in accordance with the resource information, and to print the document from the instruction data with the printer processor resources as scheduled, wherein the instruction data is adapted to be provided as at least one of page description language and job control language, and the resource information is adapted to be provided as annotation to at least one of the page description language and job control language.

58. (New) A computer programmed to provide a document for printing by a printer, the programmed computer having:

a first information processing structure to generate instruction data to enable a printer to print the document;

a second information processing structure resource to generate resource information indicative of printer processor resources required by the printer at different stages of printing the document; and

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 20

an information path such that the instruction data and the resource information can be sent from the computer to a printer,

wherein the first information processing structure is arranged for generating instruction data as at least one of page description language and job control language and the second information processing structure is arranged for (a) enabling resource information as annotation to at least one of the page description language and job control language, and (b) annotating the instruction data with the resource information.

59. (New) The method as claimed in claim 1, wherein the document has a first page that forms the current page, the first page including as resource information a full timetable for the scheduling of the printer processor resources.

60. (New) The method as claimed in claim 1, wherein the resource information is added incrementally to the current page and to the subsequent pages as the subsequent pages become available, and the pages are passed to the printer as soon as the printer can handle the pages.

61. (New) The method as claimed in claim 1, wherein no resource information is provided on the first page of the document, but is added incrementally to the subsequent pages as the subsequent pages become available, and the subsequent pages are

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 21

passed to the printer as soon as the printer can handle the subsequent pages.

62. (New) The method as claimed in claim 58, wherein the first page of the document is not analyzed for resource information, but resource information is added incrementally to the subsequent pages as the subsequent pages become available, and the subsequent pages are passed to the printer as soon as the printer can handle the subsequent pages.

63. (New) The method as claimed in claim 1, wherein the first page of the document is not analyzed for resource information, but resource information is added incrementally to the subsequent pages as the subsequent pages become available, and the subsequent pages are passed to the printer as soon as the printer can handle the subsequent pages.

64. (New) The printer as claimed in claim 17, wherein the printer is arranged to print a first page of the document that forms the current page, the first page including as resource information a full timetable for the scheduling of the printer processor resources.

65. (New) The printer as claimed in claim 17, wherein the printer is arranged to respond to resource information that is added incrementally to the current page and to the subsequent pages

Application Serial No. 09/521,663
Docket No. 30980018 US (1509-106)
Page 22

as the subsequent pages become available, and the pages are passed
to the printer as soon as the printer can handle the pages.